

Impact of Government Expenditure on Agricultural Output in Nigeria

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Abstract: Agriculture is a very important sector in the Nigerian economy as it is the country's major source of food. That notwithstanding, the support given to agriculture in terms of allocation has not been encouraging when comparing it to other sectors like mining, manufacturing, and oil. This study examines the impact of government expenditure on agriculture on agricultural output in Nigeria within the period 1986 to 2019. The specific objectives are to critically examine the impact of agricultural recurrent and capital expenditure, commercial bank credit on agriculture and agricultural labour on agricultural output using annual time series data sourced from World Development Indicator (WDI) and Central Bank of Nigeria (CBN) statistical bulletin 2019. The variables used for the study are agricultural output, recurrent expenditure on agriculture, capital expenditure on agriculture, commercial bank credit to agriculture, foreign direct investment, domestic savings, and agricultural labour. The ordinary least square method is adopted to test for empirical evidence. The regression result shows that capital expenditure on agriculture, domestic savings, foreign direct investment, and commercial bank credit to agriculture have positive and statistically significant impact on agricultural output. The study recommends the need for execution of capital and infrastructural projects, mobilization of domestic savings through financial institutions and application of mechanized farm tools in order to increase agricultural output.

Keywords: Government expenditure, agricultural output, foreign direct investment, saving.

I. INTRODUCTION

One of the major challenges facing mankind is to provide an equitable standard of living, adequate food, clean water, safe shelter and energy, a healthy and secure environment, an educated public, and satisfying job for this and future generations. Of all these necessities, the first and most basic to human life and survival is food security. According to Wangusi and Muturi (2015), agriculture is an engine for overall economic development for developing countries. Economic history shows that agricultural revolution is a basic precondition for economic growth, especially in developing countries (Alabi 2014). According to Akintunde *et al* (2013), every industrialized country passed through the agrarian era. The maxim that agriculture is the hub of the Nigerian economy underscores the importance placed on agriculture as the engine for growth. Prior to the discovery of oil, the Nigerian economy was predominantly agriculture with abundance of arable land and water resources to foster agricultural development (Iganiga and Unemhilin 2011). According to Okumadewa (1997) and FAO (2006) cited in Uremadu (2018) The agricultural sector

contributed immensely to the Nigerian economy in provision of food for the increasing population, supply of raw materials to industries, major source of employment and generation of foreign exchange earnings.

Government expenditure is considered one of the most direct and effective instruments used by governments to promote agricultural growth and reduce poverty. This follows a basic structure which is recurrent spending and capital spending. This spending structure is characterized by different expenditure categories depending on the ministry, department or agency. Government expenditure is alluded to as an outpouring of assets from government to different areas of the economy. Expenditure in agriculture is important for the transformation of agricultural sector. Government agricultural expenditure is one of the most important instruments of government for promoting overall development of the sector and the alleviation of poverty. Agricultural spending by the Government increases the rate of return to private agricultural investment and thereby leads to greater investment and output in the agricultural sector of the economy (Utpal and Dahun, 2018).

Statement of the Problem

Despite Nigeria's rich agricultural resource endowment, there has been a gradual decline in agriculture's contributions to the nation's economy, the agricultural sector during the 1960s, accounted for over 70% of the total exports in Nigeria (Idoko and Jatto 2018). The sudden decline in the agricultural sector was largely due to the rise in crude oil revenue in the early 1970s. As a result of this, today, small scale farmers are constrained by lots of problems. Overdependence on oil sector and oil exports has really affected the activities and growth of agriculture in Nigeria; this has led to inadequate funding in the sector both from the public sector and private sector. Inadequate funding over the years can also be seen in the aspect of lack of access to loans by commercial banks to Agriculture. The decreasing rate of employment or decline in the labour force involved in Agricultural sector has also been a worrisome issue.

Research Questions

Following the statement of problem, the following research questions guided the study:

1. To what extent has government capital expenditure on agriculture impacted agricultural output in Nigeria?

2. To what extent has government recurrent expenditure on agriculture impacted agricultural output in Nigeria?
3. How has commercial banks loan to agriculture impacted agricultural output in Nigeria?
4. To what extent has Labour in Agricultural sector impacted on agricultural output in Nigeria?

Objectives of the study

The broad objective of this study is to examine the impact of Government expenditure on the agricultural output in Nigeria. Specifically, the study sought to determine:

1. The Impact of Government Capital Expenditure on Agricultural Output in Nigeria from 1986 to 2019.
2. The Impact of Government Recurrent Expenditure on Agricultural Output in Nigeria from 1986 to 2019.
3. The Impact of Commercial Bank Loans to Agriculture on Agricultural Output in Nigeria from 1986 to 2019.
4. The Impact of Labour in Agricultural sector on Agricultural Output in Nigeria from 1986 to 2019.

Hypothesis of the Study

The formulated hypothesis of the study following the statement of the problem, research questions and objectives are as follows;

Hypothesis One

H₀: Government capital expenditure on agriculture has no significant impact on agricultural output in Nigeria.

H₁: Government capital expenditure on agriculture has significant impact on agricultural output in Nigeria.

Hypothesis Two

H₀: Government recurrent expenditure on agriculture has no significant impact on agricultural output in Nigeria.

H₁: Government recurrent expenditure on agriculture has significant impact on agricultural output in Nigeria.

Hypothesis Three

H₀: Commercial Banks Loan to agriculture has no significant impact on agricultural output in Nigeria.

H₁: Commercial Banks Loan to agriculture has significant impact on agricultural output in Nigeria.

Hypothesis Four

H₀: Labour in Agricultural sector has no significant impact on agricultural output in Nigeria.

H₁: Labour in Agricultural sector has significant impact on agricultural output in Nigeria.

The study is organised according to introduction, literature review, research method, data analysis, interpretation of result and discussion of findings, conclusion and recommendations.

II. REVIEW OF RELATED LITERATURE

Empirical Literature Review

Aina, and Omojola, (2017) examined the impact of government expenditure on agricultural sector performance in Nigeria for the period 1980 and 2013 using secondary data from the Central Bank of Nigeria Statistical bulletin. The result of the Error correction modelling showed that there is a significant and positive relationship between government expenditure on agriculture and agricultural production output.

Apata (2019) investigated the drivers of public-spending policy mechanisms that accounts for growth in the agricultural sector output in Nigeria and China using time series data for the period 1970-2016. The result of the of the Random-effects model showed that the policy of public-expenditure (PUEXP) and intervention (INTEV) variables were significant but negative for Nigeria, while the variables were significant and positive for China.

Boniface, Bobola and Olorunrinu (2020) analyzed the effect of government spending on agricultural output in Nigeria (1981-2018) empirically. Time series data on agricultural output, recurring government spending on agriculture, agricultural government capital expenditure, and gross domestic product were collected over a period of 37 years from the statistical bulletin of the Central Bank of Nigeria (CBN). The result revealed that capital and recurring expenditure on agriculture by the federal government were found to be positively linked to agricultural output. This study recommended that Nigeria's federal government should preserve quality and stability in its agricultural expenditure to achieve the significant productivity required.

Bafadal, Tinaprilla, Arsyad, Padangaran, Jabuddin, Sani and Taridala (2020) examined the impact of government expenditure on agricultural output and poverty. An econometric model in the form of a system of simultaneous equations was developed. The results showed that government expenditure was influenced by original regional revenue, balance funds, other legal revenues, direct-indirect expenditure, and lag fiscal policy. The result also found that agricultural output performance and poverty were affected by labour, employment, direct expenditure, investment, land area per capita, total gross regional domestic product (GRDP), interest rates, population, and lag of agricultural performance. Increasing government expenditure, on the direct expenditure point of view, has an impact on the increasing agricultural GRDP, declining labour, decreasing investment, and declining poverty. This implies that to increase output in the agricultural sector and reduce poverty, it is necessary to increase fiscal capacity in addition to increase direct expenditure.

Okorie, Osabuohien and Oaikhenan (2020) examined the effects of electricity consumption and government agricultural spending on agricultural output (AGOP) in Nigeria for the period 1981 to 2017. The Philip Peron's unit root test showed that the time series data were not stationary at levels. The ARDL result showed that poor electricity supply has significantly retarded the level of agricultural output in Nigeria

while public agricultural spending indicated a weak positive lag effect on agricultural sector performance.

Abdullahi (2021) examined the effect of government expenditure on agricultural sector in Nigeria using the Johansen cointegration and Vector error correction model approaches. Specifically, the paper examined the relationships between government expenditure on agriculture subsector outputs for crop, livestock, fishing, and forestry over the period 1980 to 2019. The results of the short run and long run analyses indicated the significant influence of government expenditure in agriculture on agricultural outputs except in forestry subsector. The granger causality test result indicated the absence of causality relationship between agricultural expenditure and agriculture outputs except in crop and livestock subsectors. However, there was a strong unidirectional causality from agricultural credit to both aggregated and disaggregated agricultural outputs. The paper recommended the need to increase government expenditure on agriculture to boost productivity. Government should also assist farmers to access credit facilities which can help increase production in the agricultural sector.

Ngobeni and Muchopa (2022) examined the effects of government expenditure in agriculture, annual average rainfall, consumer price index, food import value, and population on the value of agricultural production with a specific focus on government expenditure in agriculture for the period 1983 to 2019 in South Africa. Using the Johansen cointegration test, the results reveal that there is a long-run relationship among the variables. The Granger causality test results suggested that government expenditure in agriculture does not Granger cause the value of agricultural production. However, the two variables are linked through other variables in the model, such that an increase in government expenditure in agriculture, average annual rainfall, and population were shown to ultimately increase the value of agricultural production based on vector autoregressive (VAR) model analysis. In contrast, an increase in the consumer price index and food import value is detrimental to the value of agricultural production. These studies' findings have policy implications for increased government expenditure.

Megbowon, Mothae and Relebohile (2022) studied the effect of government agricultural expenditure on economic growth. The study investigated the effect of government agricultural expenditure on economic growth in the Kingdom of Lesotho. Descriptive statistics and inferential econometric techniques (ARDL, DOLS and VEC Granger causality) over timeseries data for the period 1982-2019 were utilized in this study. The results suggested that while current level and pattern of government agriculture expenditure cannot stimulate the desired economic growth and prosperity in the country, domestic investment appear to be a stimulant of the desired economic prosperity. Consequently, any economic growth policy or strategy that is premised on government agricultural sector expenditure would fail. Thus, the study recommended that countries including Lesotho should prioritize sustained increase in domestic investment.

The study is based on the impact of Government expenditure on Agriculture on agricultural output in Nigeria. Having gone through many theories and empirical literatures on the subject matter, it has been observed that many of them aggregated government expenditure in their study and those that disaggregated it isolated one aspect of government expenditure, studying capital expenditure. Only a few works disaggregated Government Expenditure and studied both capital and recurrent expenditure on agriculture. Therefore, the knowledge gap of this research work will be to disaggregate government expenditure into government capital and recurrent expenditure on agriculture and also to introduce these variables in the model; Commercial bank loans to farmers, labour in Agricultural Sector, Domestic Savings and foreign direct investment studying how these variables affect agricultural output backing it up with the Cobb Douglas production function. The results of this study would therefore go a long way to provide strategies to improve the output of the agricultural sector.

III. RESEARCH METHODS AND PROCEDURES

This deals with the methods and procedure used for the conduct and advancement of this study.

Study Area & Sample Size

This study covers **Nigeria**, a country in West Africa. It is situated between the Sahel to the north and the Gulf of Guinea to the south in the Atlantic Ocean. It covers an area of 923,769 square kilometres (356,669 sq mi), and with a population of over 225 million, it is the most populous country in Africa, and the world's sixth-most populous country. Nigeria borders Niger in the north, Chad in the northeast, Cameroon in the east, and Benin in the west. (Wikipedia)

Nature and Sources of Data

The study made use of secondary data that spanned from 1986 to 2019 covering a period of 34 years sourced from World Development Indicators (WDI) and Central Bank of Nigeria (CBN) Statistical Bulletin (2019).

Theoretical Framework

The Cobb-Douglas Production Function is the basic framework for this work. It is a substantial guidance for specifying supply-side agricultural potential output primarily determined by measurable input factor ($X = AL_b K_b$). For every output, there is an input. These inputs determine to a great extent what the output will turn out to be. Agricultural output has a lot of factors affecting it. These factors are in form of labour and capital hence the choice of this particular theory. This theory is to a large extent consistent with the theory of supply of production function that underlies specification of the supply-side of Agricultural output. The Cobb-Douglas production function was derived from the observation of Cobb (1928) and Douglas (1948) that over the long-run, the relative share of National Output earned by Labour (L) and Capital (K) tends to be constant. The Cobb-Douglas function further assumes constant

returns to scale and unitary elasticity of substitution. The Cobb-Douglas production is generally given by the equation:

$$X = ALb_1Kb_2 \tag{1}$$

Where:

- X = Total output
- L = Labour
- K = Capital
- b₁ and b₂ = Substitution Parameter
- b₂ = (1-b₁) and (b₁ + b₂) = 1

Linear Homogeneity of Cd Production Function: If we increase each factor in equation (1) by a constant λ, we have

$$Q = A (\lambda L) b_1 (\lambda K) b_2 \tag{2}$$

$$Q = A \lambda b_1 + b_2 Lb_1 Kb_2$$

$$Q = \lambda ALb_1 Kb_2 \text{ (since } b_1 + b_2 = 1) \tag{3}$$

Therefore, λ = 1

From equation (3), we observed that the CD production is linearly homogeneous in Labour and Capital. This implies that, if we increase all inputs by a constant multiple (λ), output will increase by that same constant. Thus the Cobb-Douglas function is to be characterized by constant return to scale. Average and. Marginal Physical Product

$$APPL = Q = ALb_1 Kb = ALb_1Kb_2-1 \tag{4}$$

$$APPK = Q = ALb_1Kb = ALb_1-1Kb_2 \tag{5}$$

$$MPPL = \Delta Q = b_2ALb_1Kb_2-1 \tag{6}$$

$$MPPK = \Delta Q = b_1ALb_1-1 Kb_2 \tag{7}$$

Model specification

The essence of economic modelling is to represent the phenomenon under investigation in such a way to enable the researcher to attribute numerical values to the concept. Using the knowledge gained from the above theoretical framework, the study examined the impact of government expenditure on agriculture in Nigeria by adopting Cobb Douglas production model. The main explanatory variables used in this study are government capital expenditure on agriculture, government recurrent expenditure on agriculture, commercial banks loans to Agriculture and Labour in the agricultural sector while Domestic savings and Foreign Direct Investment were also added as the control variables because for commercial bank loans/credit to be made available to farmers, it requires financial mobilisation through savings for when people save, banks will have the funds to loan to famers and this will in turn increase agricultural output, therefore by multiplier, domestic savings has a positive relationship with agricultural output and according to Oloyede (2014), Foreign Direct Investment has positive relationship with Agricultural Output too. Furthermore, agricultural output was used as the dependent variable. Thus, the study model is specified as:

The structural form of the model is:

$$AGO = f(GCEA, GREA, CBLA, LA, DOS, FDI) \tag{3.5}$$

The mathematical form of the model is:

$$AGO = \beta_0 + \beta_1GCEA + \beta_2GREA + \beta_3CBLA + \beta_4LA + \beta_5DOS + \beta_6FDI \tag{3.6}$$

The econometric form of the model is:

$$AGO = \beta_0 + \beta_1GCEA + \beta_2GREA + \beta_3CBLA + \beta_4LA + \beta_5DOS + \beta_6FDI + \mu_i \tag{3.7}$$

Where;

- AGO = Agricultural Output
- GCEA = Government Capital Expenditure on Agriculture
- GREA = Government Recurrent Expenditure on Agriculture
- CBLA = Commercial banks loans to Agriculture
- LA = Labour in Agricultural Sector
- DOS = Domestic Savings
- FDI = Foreign Direct Investment

B0 = Intercept of the model

B1 – β5 = Parameters of the regression coefficients of the model

μ_i = Stochastic error term.

The above equation is represented in logarithmic (L) form to enable the researcher standardize all the values and interpret the variables coefficient as elasticities. This is shown in equation 3.8 below as thus:

$$LAGO = \beta_0 + \beta_1LGCEA + \beta_2LGREA + \beta_3LCBLA + \beta_4LLA + \beta_5LDOS + \beta_6LFDI + \mu_i \tag{3.8}$$

IV. RESULT AND DISCUSSION OF FINDINGS

Here, data are analysed, and results presented. The OLS results of the model are presented and the parameter estimates subjected to some economic a priori, statistical and econometric tests. The estimation was carried out using the E-views software. Thus, the hypotheses posed earlier in this study were tested based on these empirical results.

Results

Unit Root Test

Summary of Unit Root Test

Variables	ADF Statistics @ level	ADF Statistics @ 1 st difference	ADF Critical value	Order of Integration
LAGO	-2.3839	-5.7405	-2.9604	1(1)
LGCEA	-1.3679	-6.3473	-2.9604	1(1)
LGREA	-0.9961	-5.7304	-2.960	1(1)
LCBLA	-1.1376	-6.60020	-2.9571	1(1)
LLA	-1.0297	-4.1220	-2.9571	1(1)
LDOS	-0.7802	-8.484145	-2.9571	1(1)
LFDI	-1.7803	-9.4618	-2.9571	1(1)

Source: Researchers' Computation using e-view 9

Discussion of Findings

The result presented in the table above shows the level at which the variable are stationary, it revealed that, Agricultural Output (LAGO), Government Capital Expenditure on Agriculture (LGCEA), Government Recurrent Expenditure on Agriculture (LGREA), Commercial bank Loans to Agriculture (LCBLA), Labour in Agricultural Sector (LLA), Domestic Savings (LDOS) and Foreign Direct Investment (LFDI) are stationary at first difference implying that they are integrated at order one i.e. 1(1). Hence, the stationarity of the variables to be analysed has been established.

Data Analysis

Presentation of Result

The regression model is restated and the regression result follows:

$$LAGO = \beta_0 + \beta_1 LGCEA + \beta_2 LGREA + \beta_3 LCBLA + \beta_4 LLA + \beta_5 LDOS + \beta_6 LFDI + \mu$$

Summary of OLS

Variable	Coefficient	Std. Error	T. Statistic	Prob.
C	35.0976	4.1240	8.5105	0.0001
LGCEA	0.2890	0.1309	2.2077	0.0161
LGREA	0.034545	0.0507	0.6818	0.5012
LCBLA	0.178161	0.84459	2.121277	0.0451
LLA	-7.519649	5.7091	-1.3171	0.1989
LDOS	0.210775	0.0870	2.4219	0.0277
LFDI	0.091068	0.0362	2.5103	0.0258
R. Squared	0.8545		F-Statistics	9.7496
Adjusted R-Squared	0.8333		Prob.(E-Stat.)	0.0076
Durbin-Waston Stat: 1.801032				

Source: Researchers' computation using e-view 9

The estimated model is expressed as follows:

$$LAGO = 35.0976 + 0.2890LGCEA + 0.034545LGREA + 0.178161LCBLA - 7.519649LLA + 0.210775LDOS + 0.091068LFDI + \mu$$

Interpretation of Result

As stated earlier, in this section the results obtained from the analysis are interpreted based on the criteria.

Economic Criteria:

Summary of Economic a Priori Test

Dependent Variable	Independent Variable	A Priori Expectation	Observed Sign	Remark
LAGO	LGCEA	+	+	Conforms
LAGO	LGREA	+	+	Conforms
LAGO	LCBLA	+	+	Conforms
LAGO	LLA	+	-	Do not Conform

LAGO	LDOS	+	+	Conforms
LAGO	LFDI	+	+	Conforms

Source: Researchers' computation

Discussion of Findings

The table shows a priori expectation table. The result shows that Government Capital Expenditure on Agriculture (LGCEA), Government Recurrent Expenditure on Agriculture (LGREA), Commercial bank Loans to Agriculture (LCBLA) Domestic Savings (LDOS) and Foreign Direct Investment (LFDI) has positive relationship with the dependent variable Agricultural Output (LAGO) while Labour in Agricultural Sector (LLA) has negative relationship with the dependent variable Agricultural Output (LAGO). This, therefore, implies that Government Capital Expenditure on Agriculture (LGCEA), Government Recurrent Expenditure on Agriculture (LGREA), Commercial bank Loans to Agriculture (LCBLA) Domestic Savings (LDOS) and Foreign Direct Investment (LFDI) conform to the a priori expectation, while Labour in Agricultural Sector (LLA) do not conform to the a priori expectation.

Statistical Criteria

i. Coefficient Of Determination (R²)

The R- squared measures the "goodness of fit" of a model. From the result of the ordinary least square (OLS) show that the coefficient of determination (R²) to be 0.8545 and This implies that the mix of regressors; Government Capital Expenditure on Agriculture (LGCEA), Government Recurrent Expenditure on Agriculture (LGREA), Commercial bank Loans to Agriculture (LCBLA), Labour in Agricultural Sector (LLA), Domestic Savings (LDOS) and Foreign Direct Investment (LFDI), in our model explain approximately 85.5% of the variation in the dependent variable. However, the remaining 14.5 % variations are caused by variables outside the model.

ii. Adjusted Coefficient of Determination (Adjusted R²)

The adjusted R² supports the claim of the R² with a value of 0.8333 indicating that 83.3% of the total variation in the dependent variable is jointly explained by the independent variables. Thus, this implies that the overall goodness of fit of this model is reliable.

iii. F-Test

In testing for the overall significance of the sample regression model, the f-test is applied. The hypotheses tested are:

$$H_0: \beta_1 = \beta_2 = \beta_3 = 0 \text{ (the model is not significant)}$$

$$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq 0 \text{ (the model is significant)}$$

The critical F-value is obtained using $F_{\alpha(k-1, n-k)}$

Where:

$F_{\alpha(k-1, n-k)}$ = critical F-value

α = level of significance

k-1 = numerator degree of freedom

$n-k$ = denominator degree of freedom
 $n = 34$ (number of observations)
 $k = 7$ (number of parameters)

However, the F-statistic has already been computed in the regression results and stated as:

$F = 9.74$

Decision Rule: Reject H_0 if $F_{cal} > F_{\alpha (k-1, n-k)}$, otherwise, do not reject.

$F_{0.05 (k-1, n-k)}$

$k-1 = 7-1$

$n-k = 34-7$

$F_{0.05 (6, 27)} = 2.459$ (checking 27 under 6 from the $F_{0.05}$ distribution table)

Therefore, we have the results that $F_{cal} > F_{tab}$ because, $9.74 > 2.459$ at a 5% level, we reject null hypothesis and conclude that the overall model is significant in accounting for impact of agricultural expenditure on agricultural output in Nigeria, this means that Government Capital Expenditure on Agriculture (LGCEA), Government Recurrent Expenditure on Agriculture (LGREA), Commercial bank Loans to Agriculture (LCBLA), Labour in Agricultural Sector (LLA), Domestic Savings (LDOS) and Foreign Direct Investment (LFDI) have influence on Agricultural Output (LAGO) in Nigeria.

Diagnostic Test

Econometric Criteria

This refers to the second order test and it checks whether the assumptions of the OLS are satisfied or not.

i. Autocorrelation Test (DW)

Here, the Durbin Watson test is used to check for the presence of autocorrelation between successive values of the error term. The assumption is if Durbin Watson tends to 2 or 2 that there is no autocorrelation. From the regression results, we observe that Durbin Watson is 1.801032, this shows that the Durbin Watson statistic is approximately equal to 2, thereby indicating that there is no autocorrelation in the model.

ii. Heteroskedasticity

This is the violation of the assumption of constant variance of the error terms i.e. unequal variance. The Breusch-Pagan-Godfrey test is adopted to check for the presence of heteroskedasticity in the model. The decision rule is to reject the null hypothesis if the chi-square is less than 5 percent

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-Statistics	0.4374	Prob. F(6,27)	0.5805
Obs R-Squared	2.6814	Prob. Chisquare (6)	0.7126
Scaled explained ss	2.6634	Prob. Chisquare (6)	0.7549

Source: Researchers' computation using e-view 9

From the table we discover that probability of chi-square is greater than 5 percent we do not reject the null hypothesis.

Therefore, we conclude that there is no presence of heteroskedasticity in the model which is also in line with the assumption of ordinary least square.

iii. Multicollinearity test

The Variance Inflation Factors was used to check for the multicollinearity. The report is based on the centered VIF values. If the variables have Values less than 10, we conclude that there is no multicollinearity. However, if the centered VIF values are greater than 10, we conclude that multicollinearity exists.

Summary of multicollinearity test

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	537.0184	5269.450	NA
LGCEA	0.071703	24.18313	8.042914
LGREA	0.062285	18.11207	7.890139
LCBLA	0.065825	15.32489	7.042191
LLA	32.45120	513464.6	5.251276
LDOS	0.27450	346.9131	5.553838
LFDI	0.058701	42.09453	5.756525

Source: Researchers' computation using e-view 9

The table presents multicollinearity test using Variance Inflation Factors. The centered VIF showed that values obtained by the variables are less than 10, we therefore conclude that there is absence of multicollinearity in the model.

Evaluation of Research Hypotheses:

The research hypothesis stated in chapter one will be analysed using the help of the t-test. The test is used to determine the reliability/statistical significance of each variable coefficient.

T-test

This is the test for individual significance of variables and a variable is significant when the absolute t-statistics is greater than the $t_{0.05}$ critical value at 5% level of significance. Using 95% confidence interval and 27 degrees of freedom (34-7) will give you the value 2.052 from the statistical table.

Summary of T-test

Variables	T-test	T-critical at 5% level of significance	Assessment
LGCEA	2.2077	2.052	Significant
LGREA	0.6818	2.052	Not Significant
LCBLA	2.1213	2.052	Significant
LLA	1.3171	2.052	Not Significant
LDOS	2.4219	2.052	Significant
LFDI	2.5103	2.052	Significant

Source: Researchers' Computation

Hypothesis One

H₀: Government capital expenditure on agriculture has no significant impact on agricultural output in Nigeria.

H₁: Government capital expenditure on agriculture has significant impact on agricultural output in Nigeria.

From the results obtained in the t-test, we observed that Government capital expenditure on agriculture with the t-value, 2.2077 is greater than 2.052 ($2.2077 > 2.052$) therefore, it's significant. This implies that for the period under study, 1986-2019 Government capital expenditure on agriculture had significant impact on agricultural output in Nigeria. Therefore, we reject the null hypothesis and accept the alternative, and conclude that Government capital expenditure on agriculture has significant impact on agricultural output in Nigeria.

Hypothesis Two

H₀: Government recurrent expenditure on agriculture has no significant impact on agricultural output in Nigeria.

H₁: Government recurrent expenditure on agriculture has significant impact on agricultural output in Nigeria.

From the results obtained in the t-test, we observed that Government recurrent expenditure on agriculture with the t-value, 0.6818 is less than 2.052 ($0.6818 < 2.052$) therefore, it's not significant. This implies that for the period under study, 1986-2019 Government recurrent expenditure on agriculture had no significant impact on agricultural output in Nigeria. Therefore, we do not reject the null hypothesis and conclude that Government recurrent expenditure on agriculture has no significant impact on agricultural output in Nigeria.

Hypothesis Three

H₀: Commercial Banks Loan to agriculture has no significant impact on agricultural output in Nigeria.

H₁: Commercial Banks Loan to agriculture has significant impact on agricultural output in Nigeria.

From the results obtained in the t-test, we observed that Commercial Banks Loan to agriculture with the t-value, 2.1213 is greater than 2.052 ($2.1213 > 2.052$) therefore, it's significant. This implies that for the period under study, 1986-2019 Commercial Banks Loan to agriculture had significant impact on agricultural output in Nigeria. Therefore, we reject the null hypothesis and accept the alternative, and conclude that Commercial Banks Loan to agriculture has significant impact on agricultural output in Nigeria.

Hypothesis Four

H₀: Labour in Agricultural sector has no significant impact on agricultural output in Nigeria.

H₁: Labour in Agricultural sector has significant impact on agricultural output in Nigeria.

From the results obtained in the t-test, we observed that Labour in Agricultural sector with the t-value, 1.3171 is less than 2.052 ($1.3171 < 2.052$) therefore, it's not significant. This implies that for the period under study, 1986-2019 Labour in Agricultural

sector had no significant impact on agricultural output in Nigeria. Therefore, we do not reject the null hypothesis and conclude that Labour in Agricultural sector has no significant impact on agricultural output in Nigeria.

V. CONCLUSION AND RECOMMENDATION

The study examined the impact of Government Expenditure on Agriculture on Agricultural Output in Nigeria. The conclusion drawn from the empirical results in this study is that Government Expenditure on Agriculture has a significant impact on Agricultural Output in Nigeria. Thus, the study concludes that the role of Government Capital Expenditure on Agriculture, Commercial bank Loans to Agriculture, Domestic Savings and Foreign Direct Investment promotion in the economy should be adhered to in the policy options that pertains promoting Agricultural Output in Nigeria. The study also concludes that all the variables in the model showed positive and significant impact on Agricultural Output excluding Labour in Agricultural Sector which has a negative and insignificant impact. This implies that it is imperative for Nigeria to keep spending on agriculture and also putting in place policy actions that will reduce Labour while still maintaining increasing Agricultural Output. However, Government Recurrent Expenditure on Agriculture has a positive relationship but insignificant impact on Agricultural Output. In line with the findings of this research, the following recommendations were made:

1. Concerted effort should be made by the government to create favourable conditions and policies in order to mobilize domestic savings from small depositors, especially small scale farmers to enable purchase modern mechanized farms tools in order to increase agricultural output.
2. Since government capital expenditure can improve output in agriculture sector, it is pertinent to formulate policies aiming at increasing government capital expenditure on agriculture in Nigeria.
3. An increase in capital expenditure in the budget is recommended also since capital expenditure has a significant impact on Agricultural Output.
4. The monetary authorities should come out with stable policy guideline to commercial banks disbursement of loans to farmers at a very low interest rate in order to help them expand their production capacity.
5. Carefully planned fiscal and monetary policies should be put in place to encourage foreign direct investment, since its increase increases agricultural output.
6. Since labour has a negative relationship with output and is insignificant, policies to reduce labour should be concentrated on so as to increase output.

REFERENCES

- [1] Aigheyisi, O. (2013) "The Relative Impacts of Federal Capital and Recurrent Expenditure on Nigeria Economy (1980-2011)" American Journal of Economics, 3(5): 210-221
- [2] Akintunde, W.A., Adesope, A. A., & Okruwa, V. O (2013) "An Analysis of Federal Government Expenditure and Monetary Policy

- on Agricultural Output in Nigeria”. *International Journal of Economics, Finance and Management Sciences*, 1(6): 310-317.
- [3] Alabi, R A (2014). “Impact of agricultural foreign aid on agricultural Growth in Sub Saharan Africa: A Dynamic Specification”. AGRODEP Working Paper 0006. International Food Policy Research Institute, Washington D.C, US
- [4] Bawa S. B (2018). “Impact of Government Budgetary Expenditure on agricultural sector in Nigeria”, Unpublished Thesis of the department of economics, Faculty of Social and Management Sciences Kaduna State University, Kaduna Nigeria.
- [5] CBN (2018). “Central Bank of Nigeria Annual Report and Statement of Account” Abuja, Nigeria, CBN Publication.
- [6] Ebere C & Osundina K. (2014) “Government Expenditure on agriculture and economic growth in Nigeria.” *International Journal of Science and Research*. 3(9). ISSN(Online): 2319-7064.
- [7] Ewetan O, Fakile A. Urhie E & Oduntan E (2017), “Agricultural Output and Economic Growth in Nigeria “, *Journal of African Research in Business & Technology*,
- [8] Ewubare, D. B & J. A Eyiotope (2015). “The effects of public expenditure on agricultural production output in Nigeria”. *Journal of Research in Humanities and Social Science*, 3(11): 7-23
- [9] Idoko, C.U & Jatto, S.M. (2018). “Government Expenditure on agriculture and economic growth in Nigeria” *International Journal of academic research and reflection*, 6(4):24-. ISSN 2309-0405
- [10] Iganiga, B.O and D.O. Unemhilin (2011). “The impact of Federal Government agricultural expenditure on agricultural Output in Nigeria.” *Journal of Economics* 2(2): 81-88
- [11] Ikala, P.A. (2010). “Impact of public agriculture Expenditure on agricultural output (1978-2007)”. An Unpublished thesis of Caritas University, Amorji-Nike; Emene Enugu.
- [12] Izuchukwu O. (2011). Analysis of the contribution of agricultural sector on Nigerian economic, development. *World Review of Business Research* 1(1) 191-200
- [13] Loto, M.A. (2011). “Impact of government Sectoral expenditure on economic growth”. *Journal of economics and international finance*, 3(11): 646-652.
- [14] NBS (2019). “Review of the Nigerian Economy”. National Bureau of Statistics, Abuja, Nigeria.
- [15] NBS (2020). “Review of the Nigerian Economy”. National Bureau of Statistics, Abuja, Nigeria.
- [16] Nwajiuba C (2012), http://www.boell.org/downloads/4_Deal_Nigeria_Agriculture.pdf page3.
- [17] Obi, K., & Bidemi, O.J. (2016). “Dynamic Effect of Government Spending On Agricultural Output In Nigeria”. *The International Journal of Social Sciences and Humanities Invention*, 3(2): 1880-1886
- [18] Oji-Okoro I. (2011) “Analysis of the contribution of Agricultural Sector on the Nigerian Economic Development” *World Review of Business Research*, 1(1):191-200.
- [19] Okpara C (2017), “Government Expenditure on agriculture and agricultural output on economic growth in Nigeria (1980-2015), *Middle East Journal of Scientific Research* 25(5): 1063-1079
- [20] Olawumi O & Oyewole, A. (2018). “Public Expenditure on Agriculture and Output growth in Nigeria” *International Journal of Arts and Commerce* 7(4): 60-78
- [21] Oloyede, B. B. (2014). ‘Impact of Foreign Direct Investment on Agricultural Sector Development in Nigeria (1981 – 2012)’. Kuwait chapter of *Arabian Journal of Business & Management Review*, 3, 14-24.
- [22] Uremadu. O., Ariwa, O. & Uremadu E.(2014). “Impact of Government Agricultural Expenditure on Agricultural Productivity in Nigeria”, *Current Investigations in Agriculture and Current Research*, 5(3).
- [23] Utpal, K D & Dahun S D (2018), “Public Expenditure and Agricultural Production in Meghalaya, India- An Application of Bounds Testing Approach to Co-Integration and Error Correction Model,” *International Journal of Environmental Sciences & Natural Resources*, Juniper Publishers Inc., 8(2), 71-78
- [24] Wang X. & Wen, Y. (2013). “Is Government Spending a Free Lunch? —Evidence from China”, Research Division, Federal Reserve Bank of St Louis, Working Paper Series, 2013-013A.
- [25] Wangusi C & Muturi, (2015), “Impact of Public Spending on Agricultural Productivity: a case study of Kenya”, *International Journal of Sciences: Basic and Applied Research (JSBAR)*, 24(4):180-187